

Analysis of H5N1 outbreaks in animals and humans

8-17-06 update

USAID

Avian and Pandemic Influenza
Preparedness and Response Unit

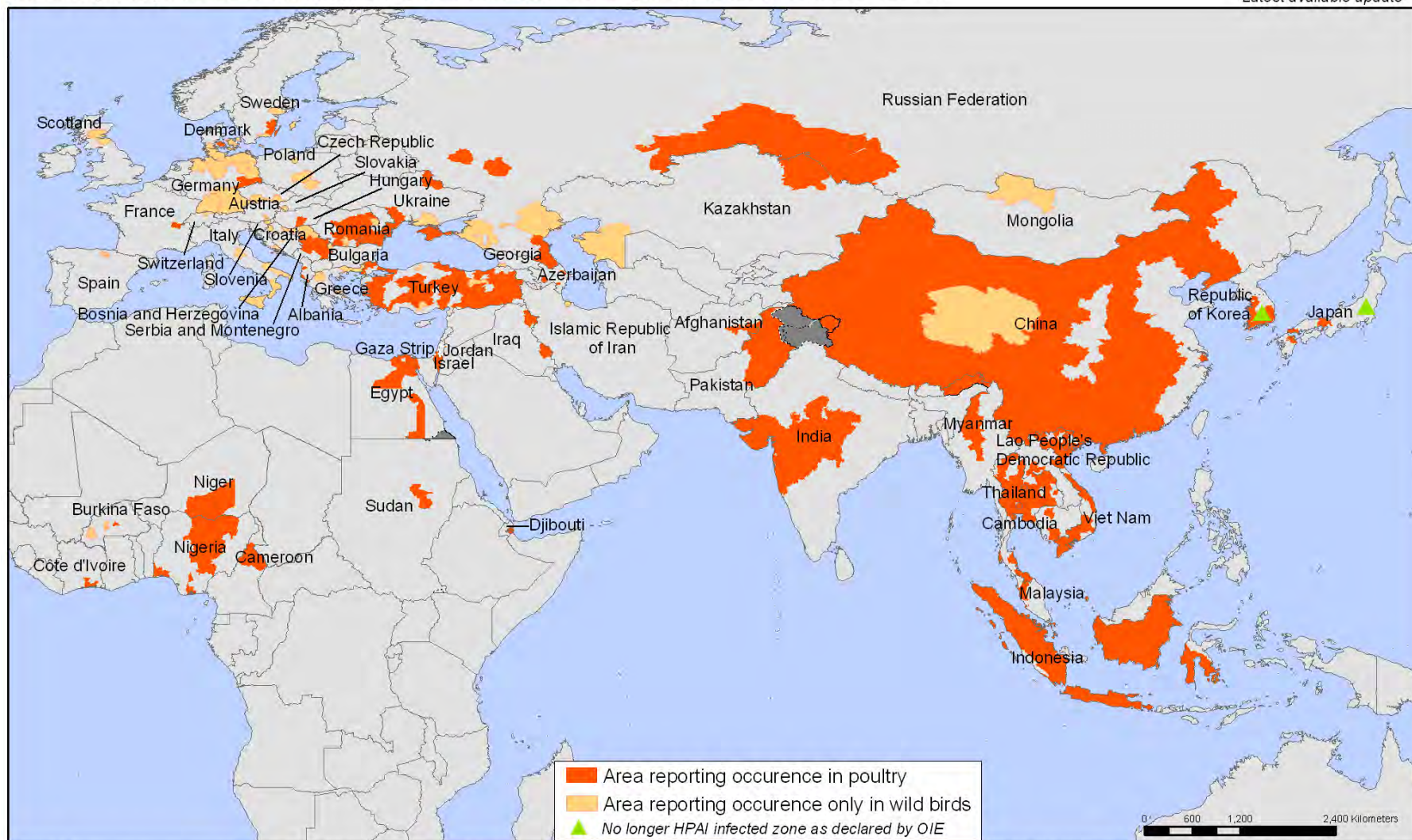
Overview of the Current Situation

As of August 17, 2006:

- H5N1 detected in birds in 55 countries
(only 2 have eliminated the disease)
 - *More than 200 million birds have died or been culled to control the disease*
 - *Affected countries in Asia, Europe, Near East, Africa*
- H5N1 detected in humans in 10 countries
total of 239 cases and 140 deaths reported
- WHO pandemic threat level = 3
(on a scale of 1-6)

Areas reporting confirmed occurrence of H5N1 avian influenza in poultry and wild birds since 2003

Status as of 2 August 2006
Latest available update



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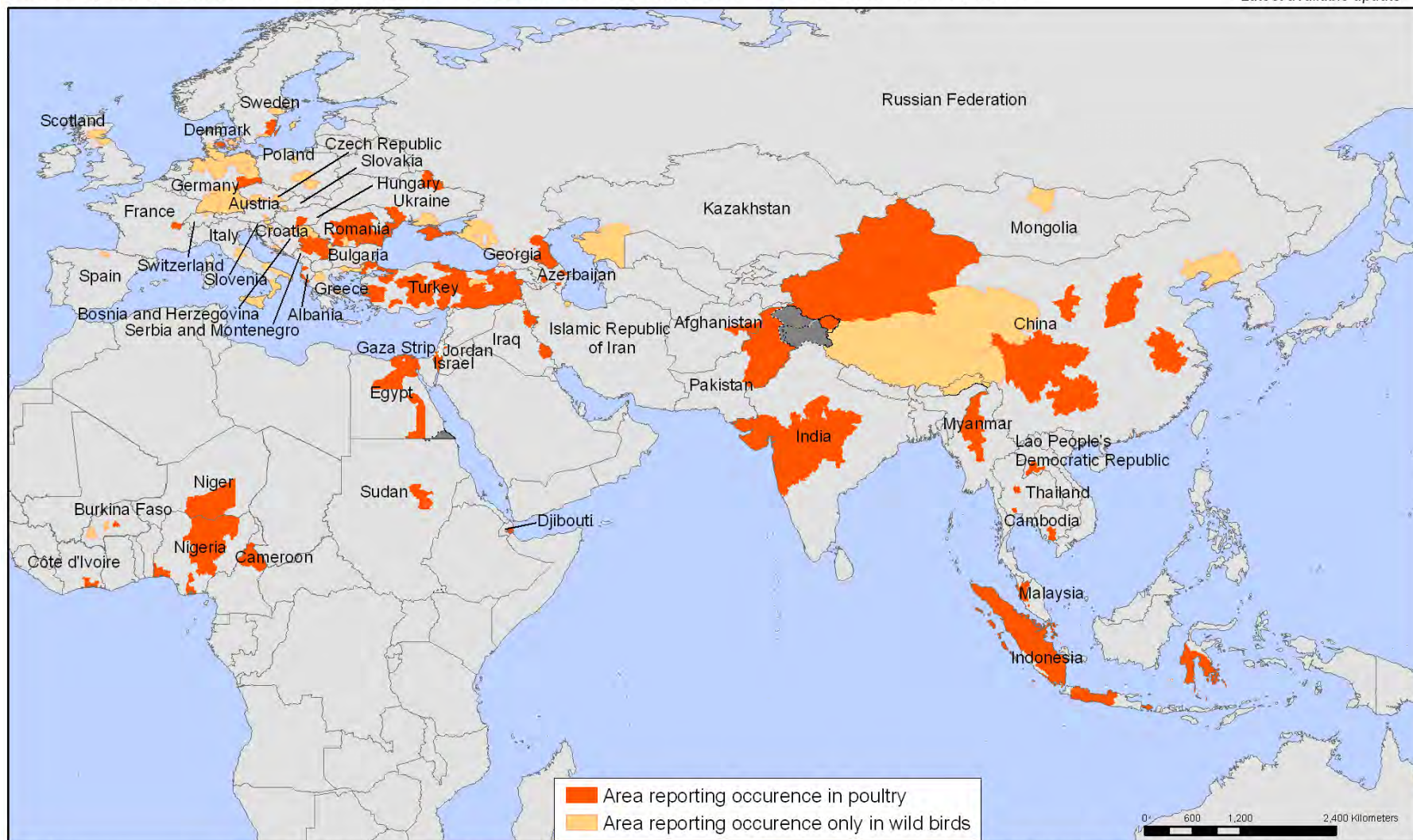
Data Source: World Organisation for Animal Health (OIE) and national governments

Map Production: Public Health Mapping and GIS

Communicable Diseases (CDS) World Health Organization

Areas reporting confirmed occurrence of H5N1 avian influenza in poultry and wild birds since January 2006

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World Health Organization

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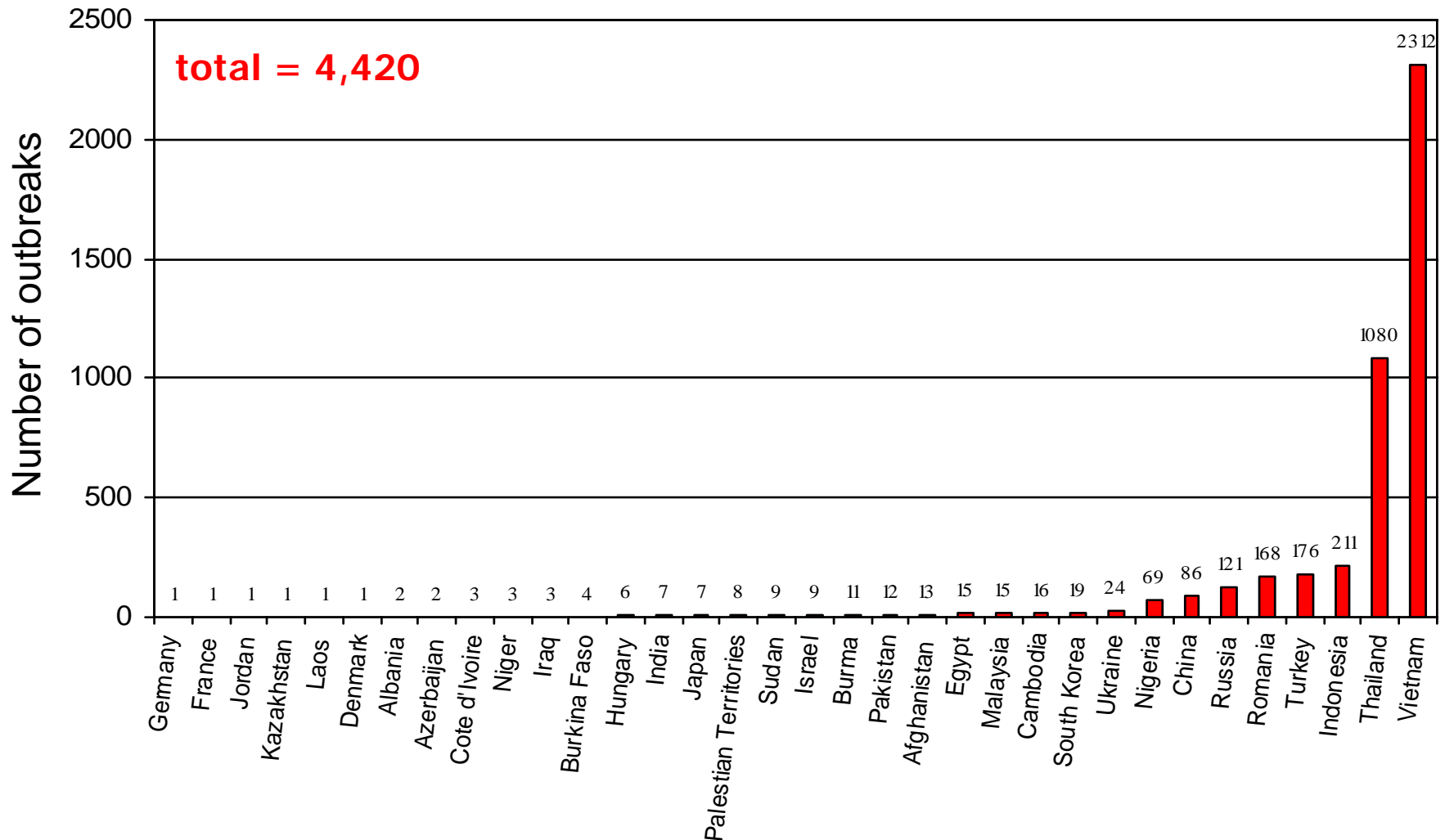
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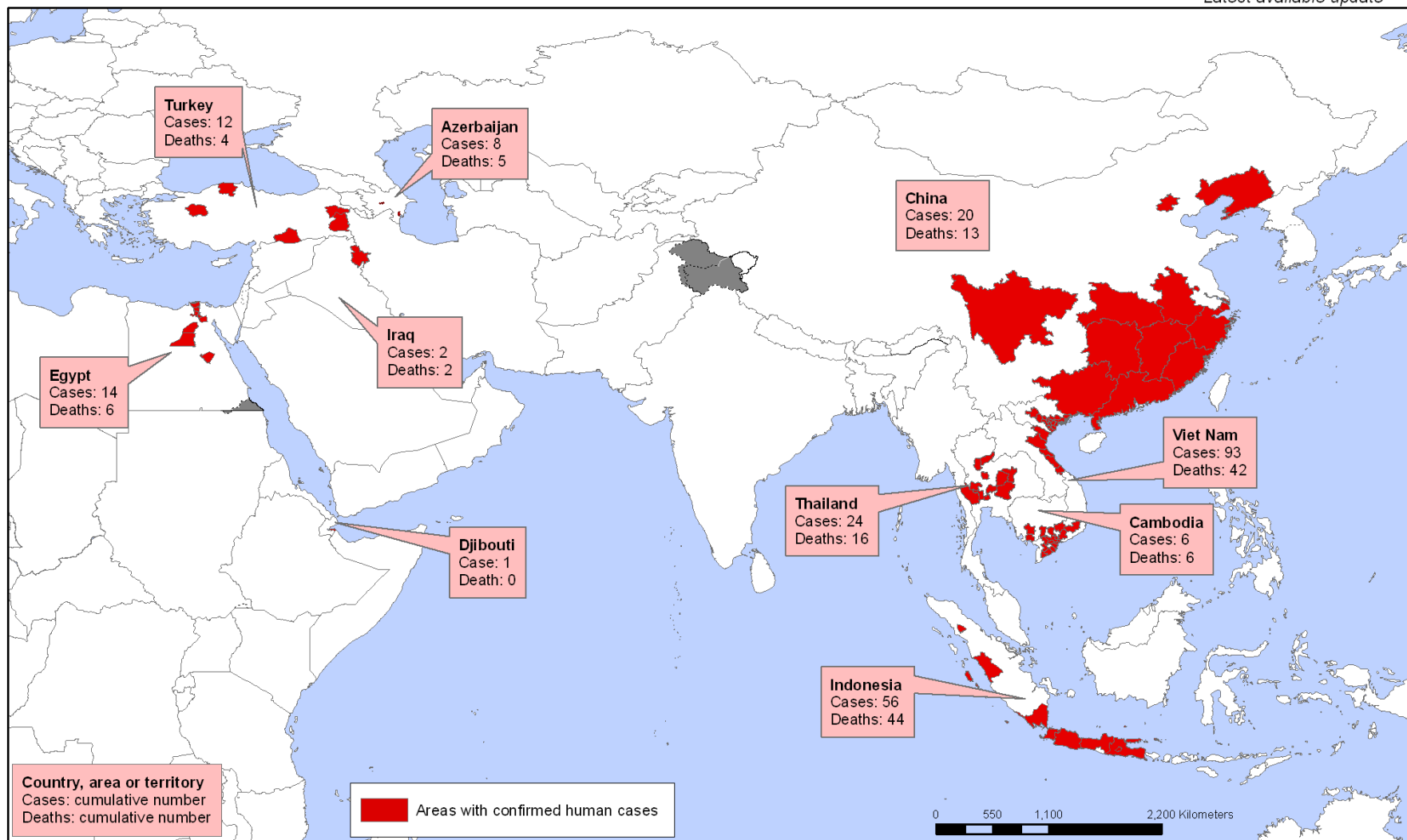
Communicable Diseases (CDS) World Health Organization

Total Outbreaks of H5N1 in Poultry Varies by Country (Dec 2003 – Aug 7, 2006)



Affected areas with confirmed human cases of H5N1 avian influenza since 2003

Status as of 9 August 2006
Latest available update



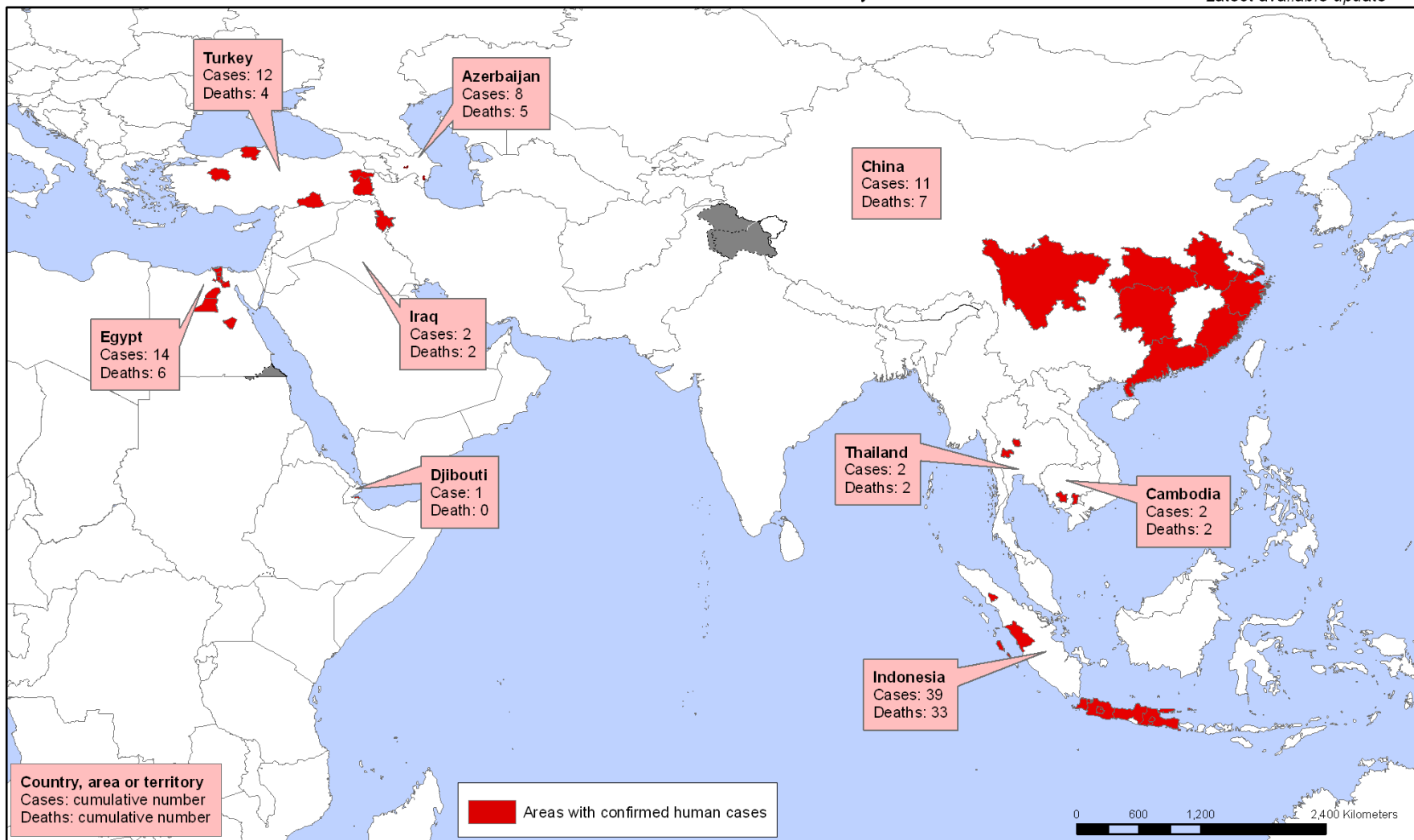
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Affected areas with confirmed human cases of H5N1 avian influenza since January 2006

Status as of 9 August 2006
Latest available update



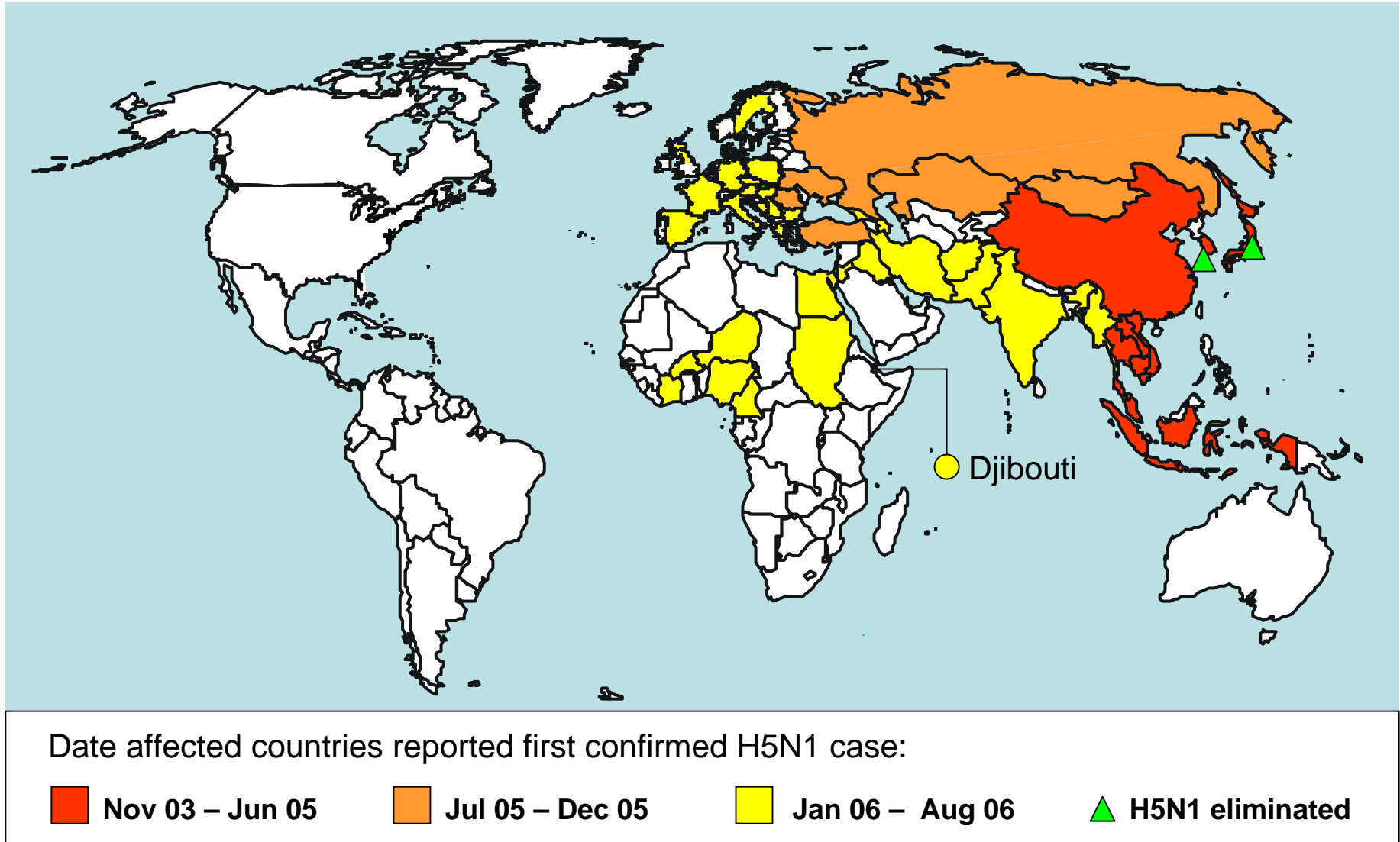
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Trends

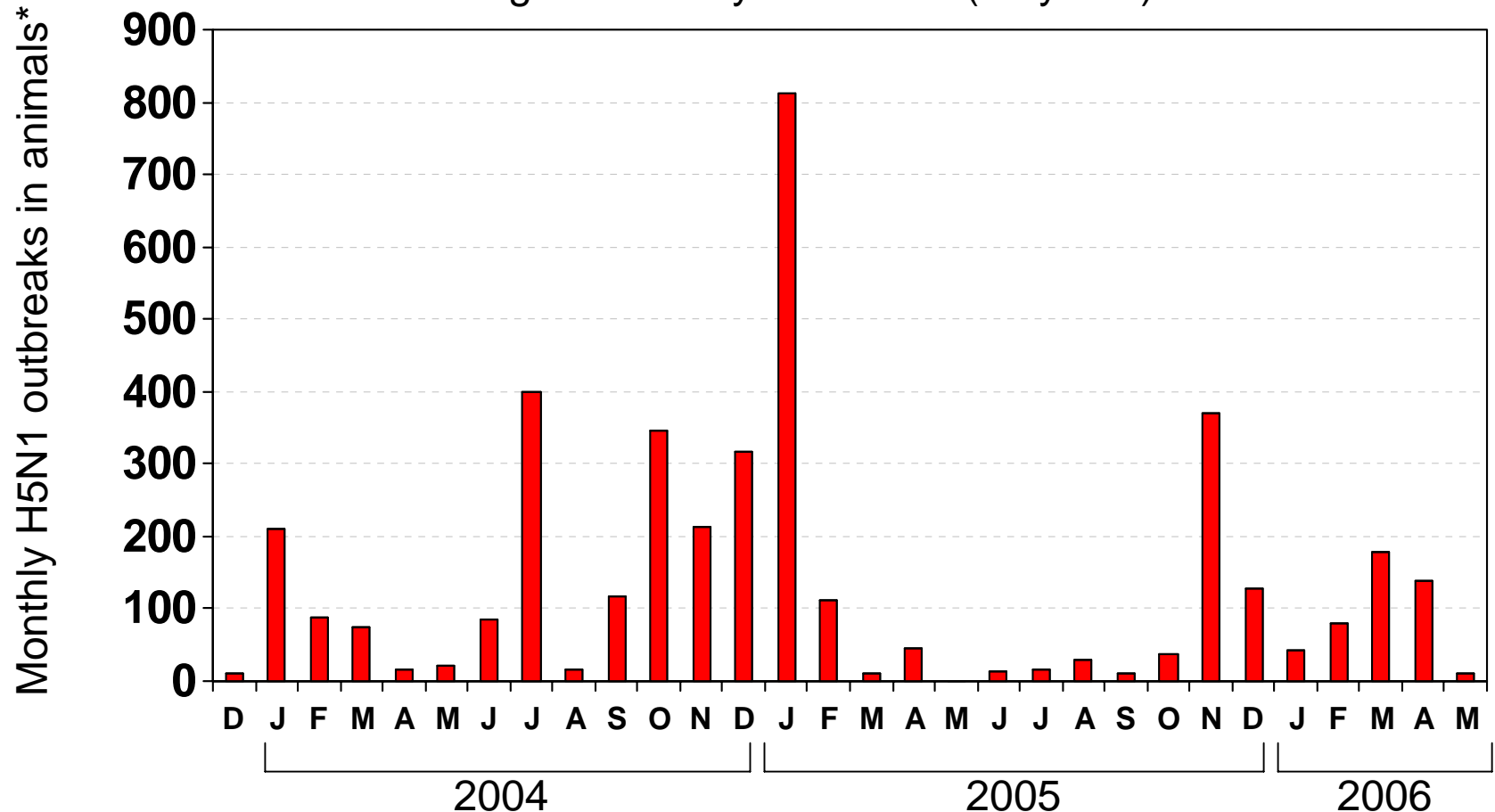
Since July 2005, H5N1 Avian Influenza has Spread Rapidly



Overall, Animal H5N1 Outbreaks Appear More Common in Nov-Apr

Average # monthly outbreaks (Nov-Apr) = 167

Average # monthly outbreaks (May-Oct) = 85

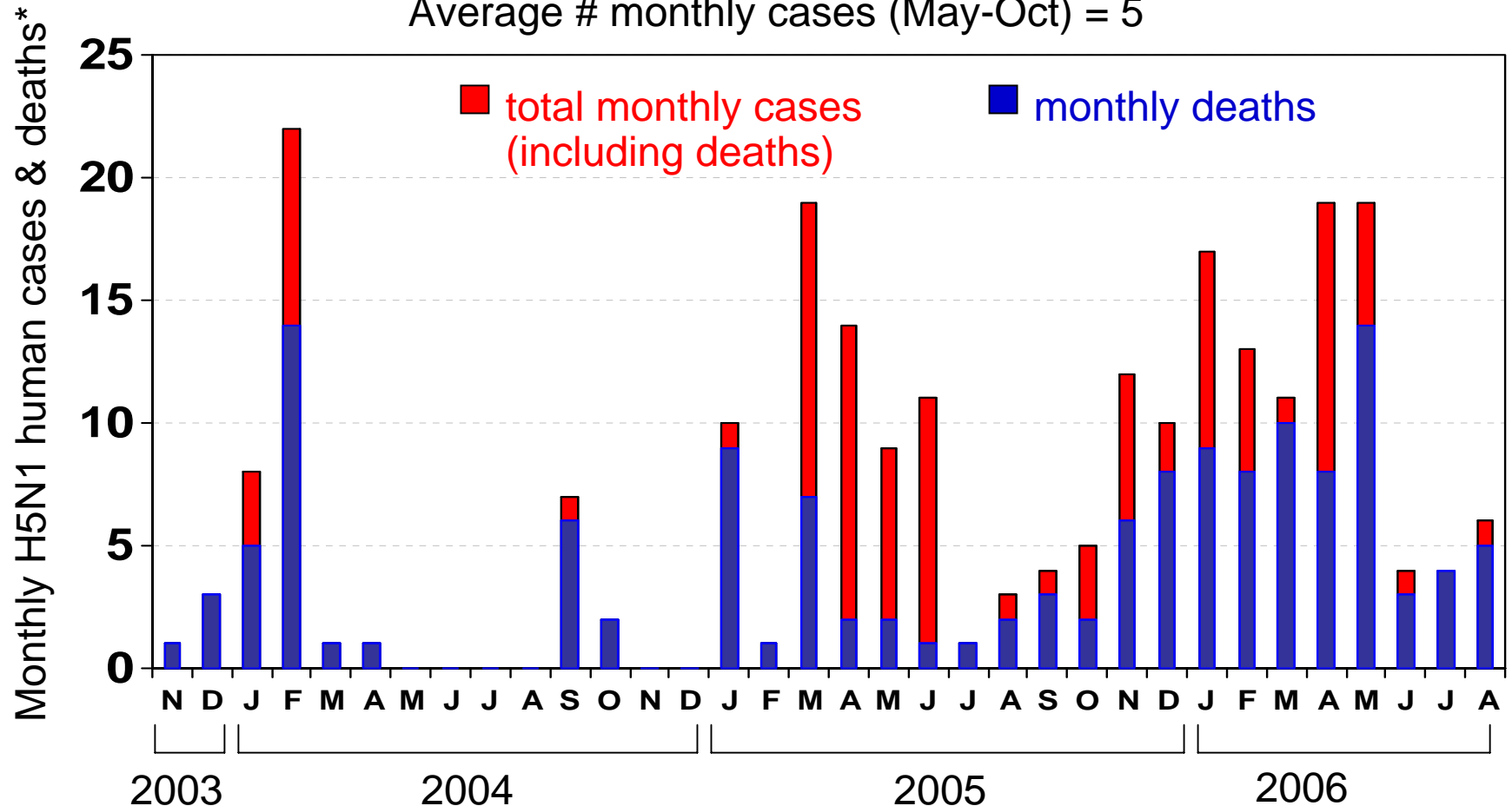


* Based on country reports. Data compiled by FAO and OIE.

Likewise, Human H5N1 Cases and Deaths Appear More Common in Nov-Apr

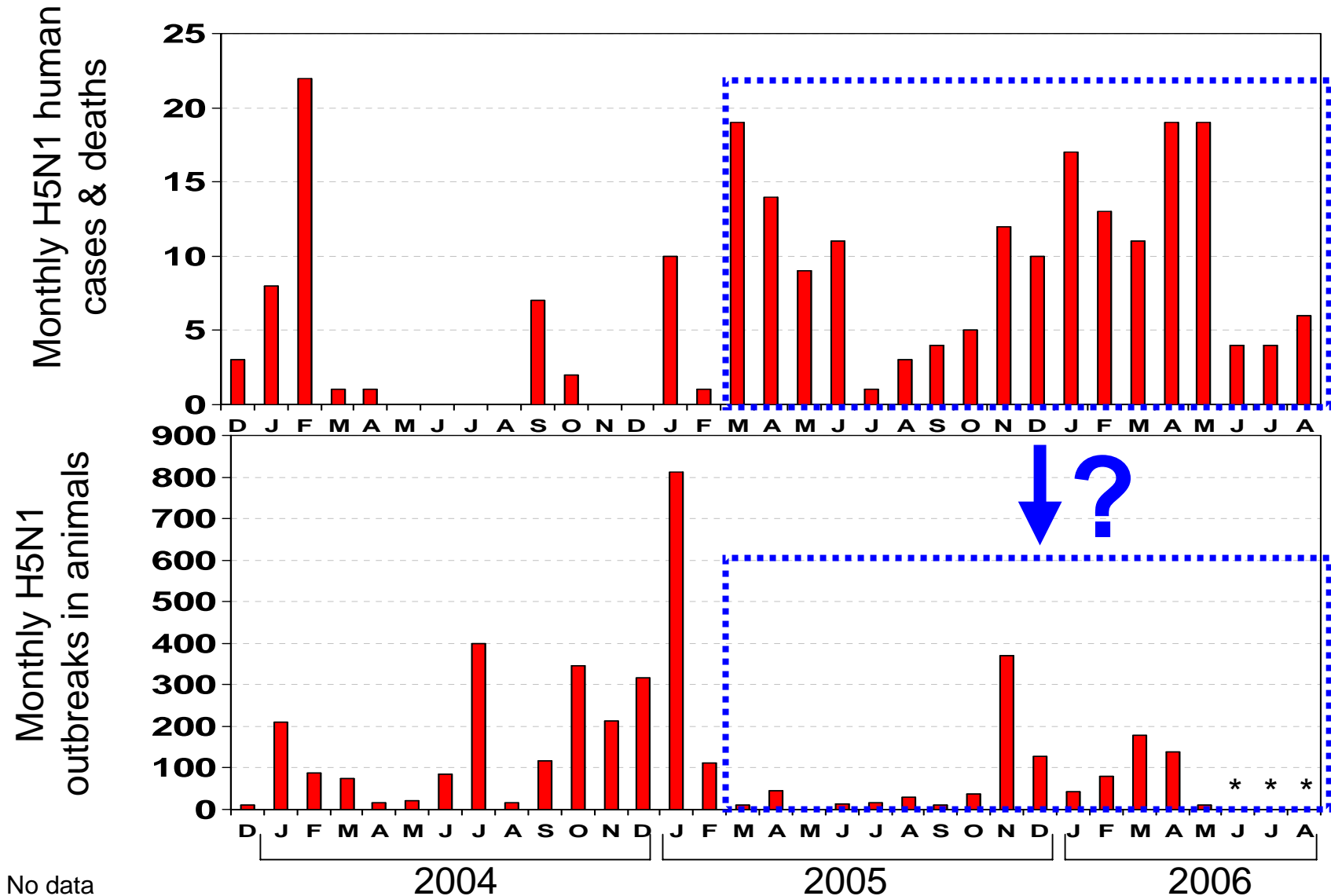
Average # monthly cases (Nov-Apr) = 10

Average # monthly cases (May-Oct) = 5



* Laboratory-confirmed H5N1 cases and deaths in humans reported to the World Health Organization as of 17 August 2006.

However, Human Case Reports Don't Always Correlate with Animal Outbreak Reports

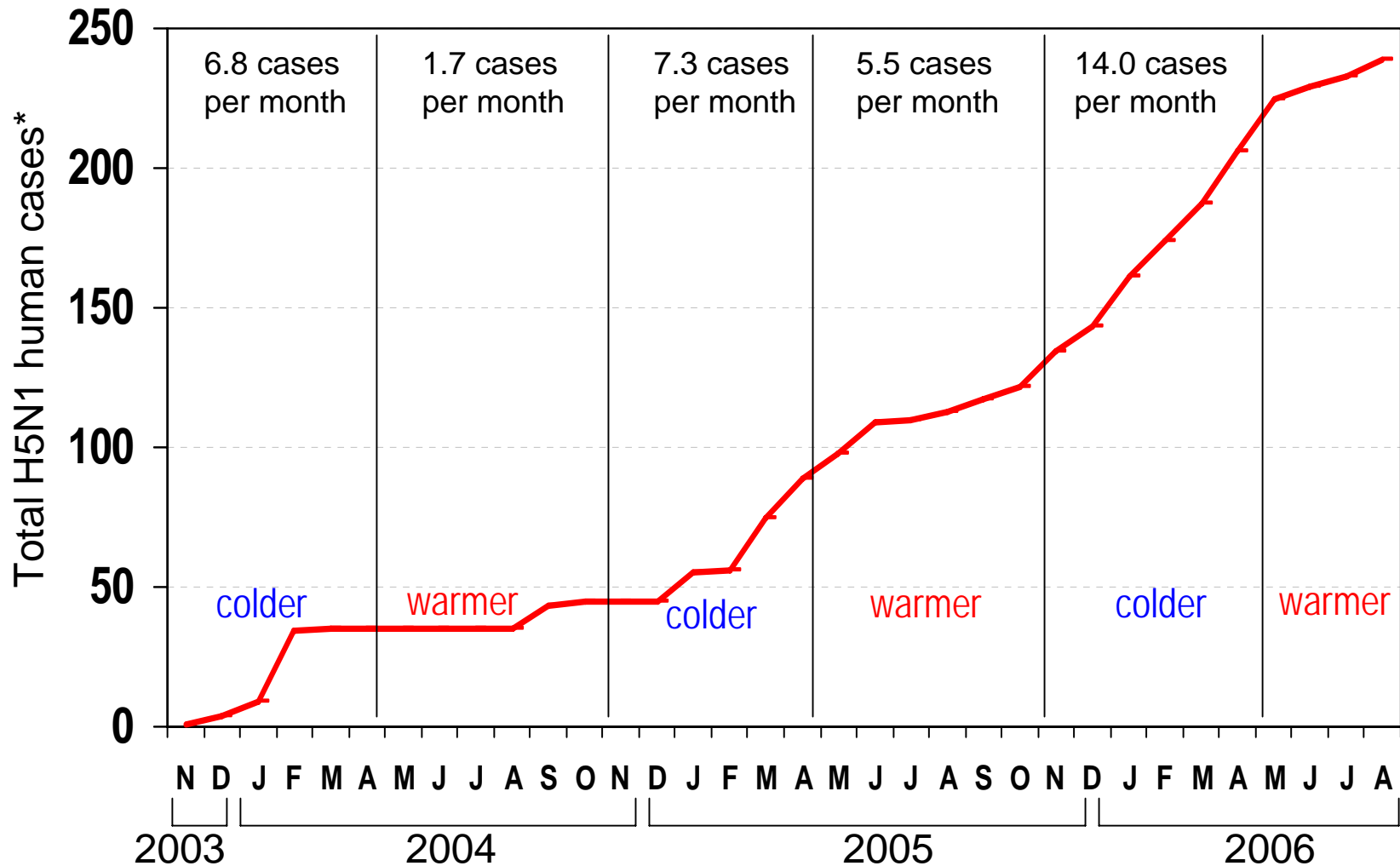


Human H5N1 Cases Closely Follow Animal Outbreaks In Most Countries

Country	1st animal outbreak started*	1st human case (onset of symptoms)*	Time lag (months)	Total human cases*
Azerbaijan	Jan 2006	Feb 2006	1	8
Cambodia	Feb 2004	Jan 2005	11	6
China/HK	Mar 1997	May 1997	2	18
China	Feb 2004	Nov 2003	0	21
Djibouti	Apr 2005	Apr 2006	0	1
Egypt	Feb 2006	Mar 2006	1	14
Indonesia	Feb 2004	Jul 2005	17	58
Iraq	Jan 2006	Jan 2006	0	23
Thailand	Dec 2003	Jan 2004	1	24
Turkey	Oct 2005	Jan 2006	3	12
Vietnam	Dec 2003	Dec 2003	0	93

*Data from WHO and OIE

Warmer Temperatures Slow, but Don't Stop H5N1 Transmission (Birds to Humans)



* Laboratory-confirmed H5N1 cases and deaths in humans reported to the World Health Organization as of 17 August 2006.

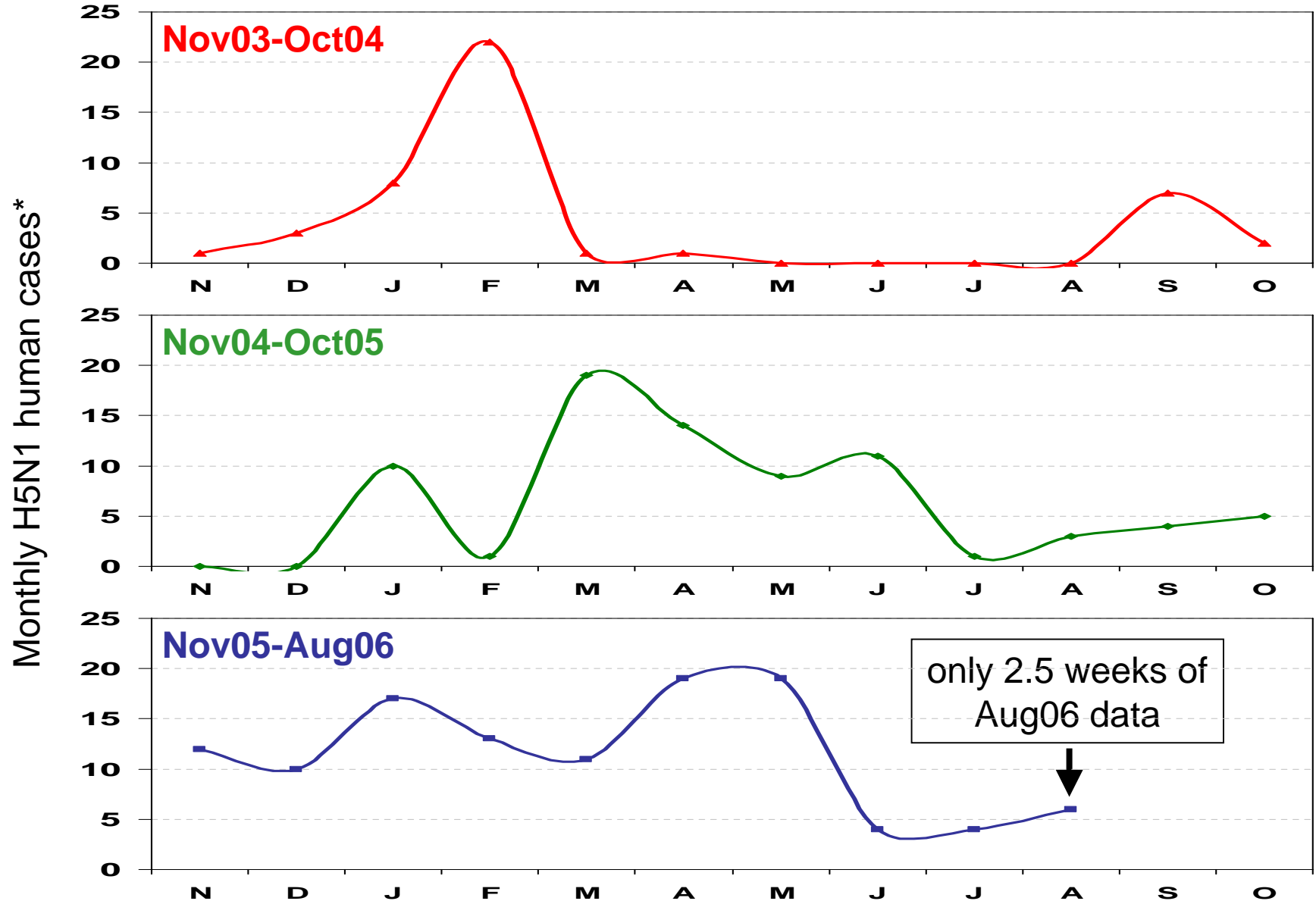
Reported H5N1 Human Cases Increasing Recently and Involving More Countries

Month/ year	Azer- baijan	Camb- odia	China	Djib- outi	Egypt	Indo- nesia	Iraq	Thai- land	Tur- key	Viet- nam	Total
2003	0	0	1	0	0	0	0	0	0	3	4
2004	0	0	0	0	0	0	0	17	0	29	46
2005	0	4	8	0	0	17	0	5	0	61	95
2006	8	2	12	1	14	41	2	2	12	0	94
Total	8	6	21	1	14	58	2	24	12	93	239

- 39% of total cases to date
- 58% increase in monthly rate compared to previous year
- Human cases distributed over 9 countries

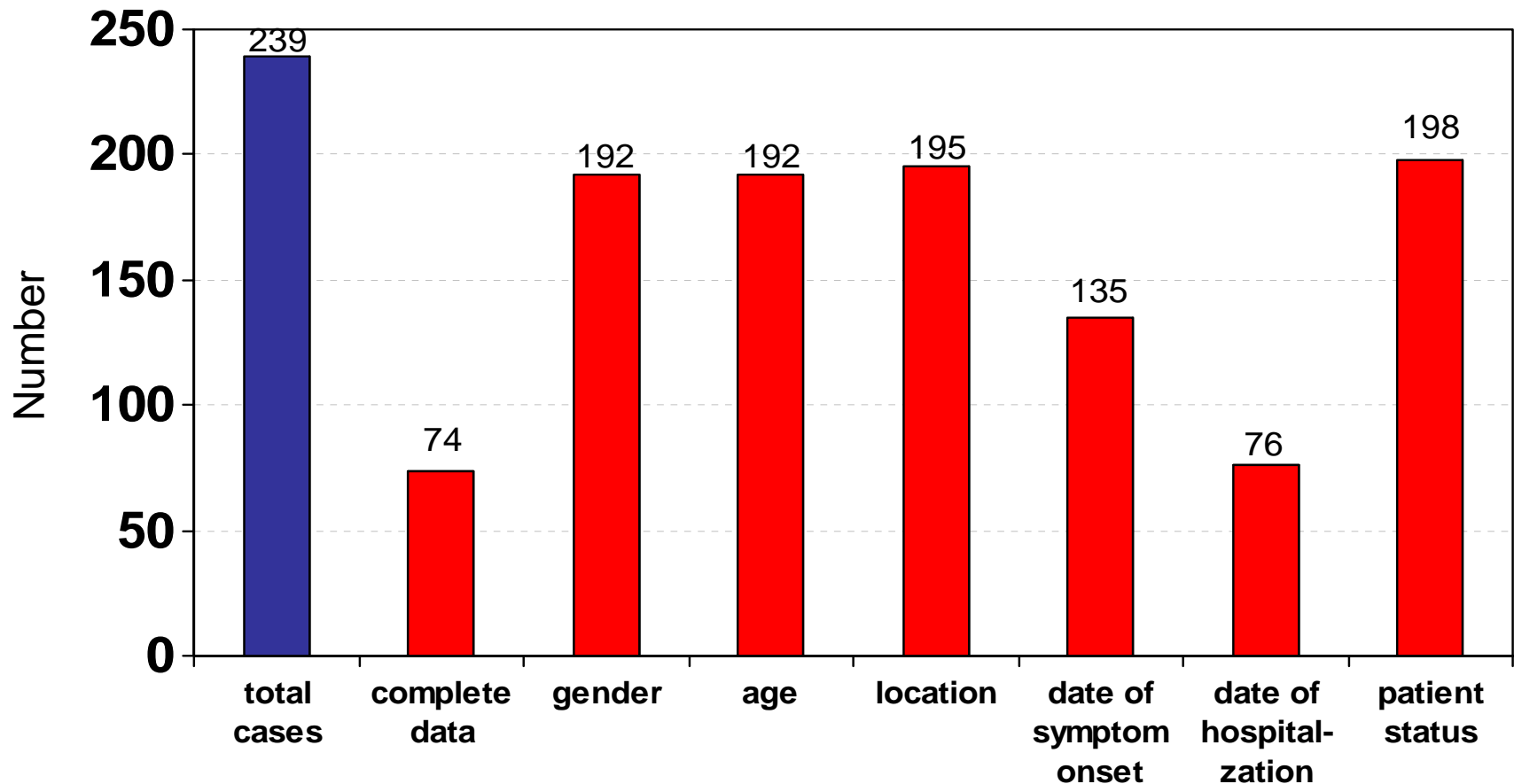
*Laboratory-confirmed H5N1 cases in humans reported to the World Health Organization as of 17 August 2006.

Humans Cases More Distributed Over Year

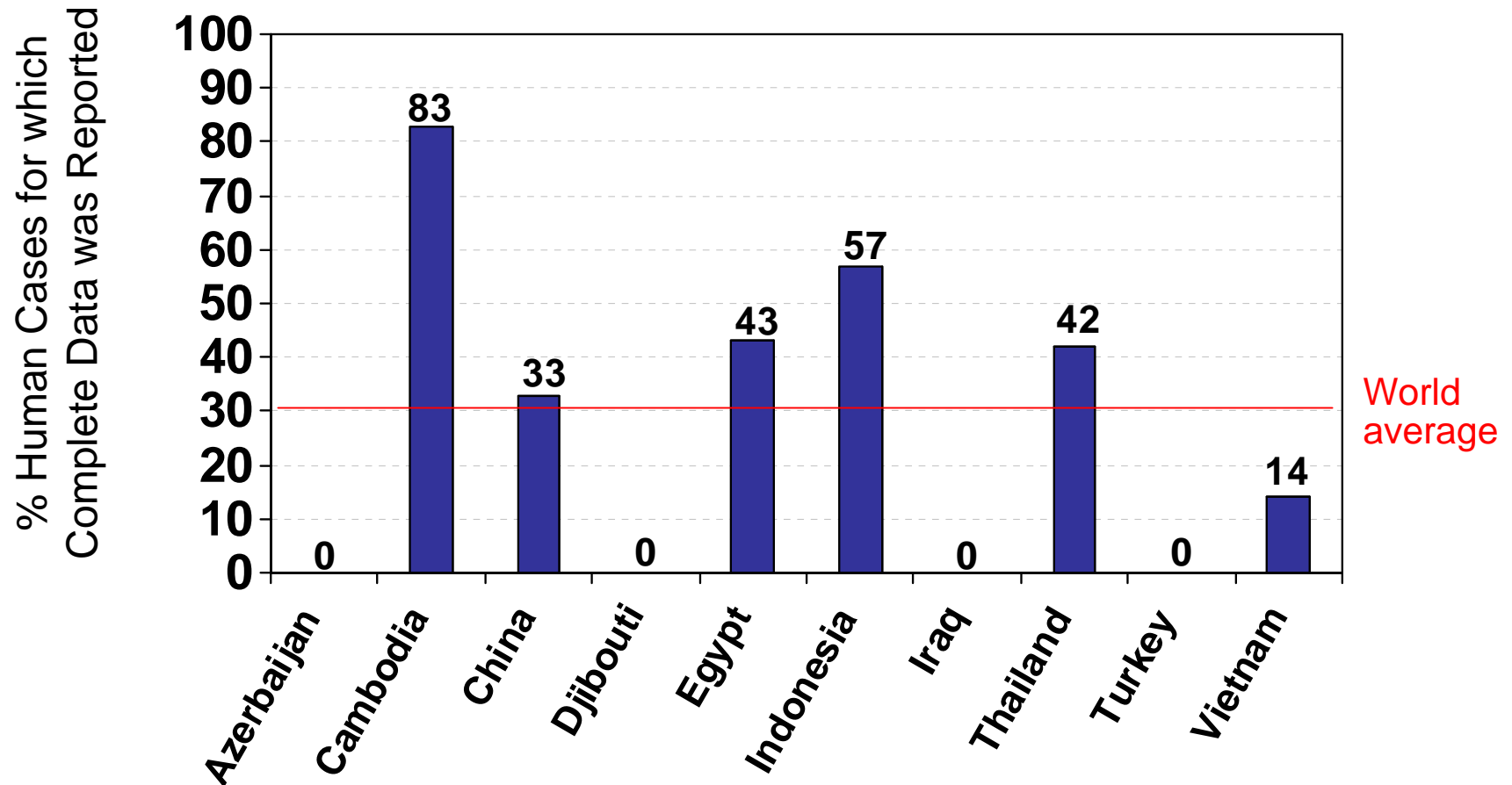


* Laboratory-confirmed H5N1 cases and deaths in humans reported to the World Health Organization as of 17 August 2006.

Overall, Reporting of Human Cases Often Not Complete...



...And Most Countries Don't Provide Complete Data



More Experience Does Not Dramatically Improve Speed and Quality of Reporting...

INDONESIA

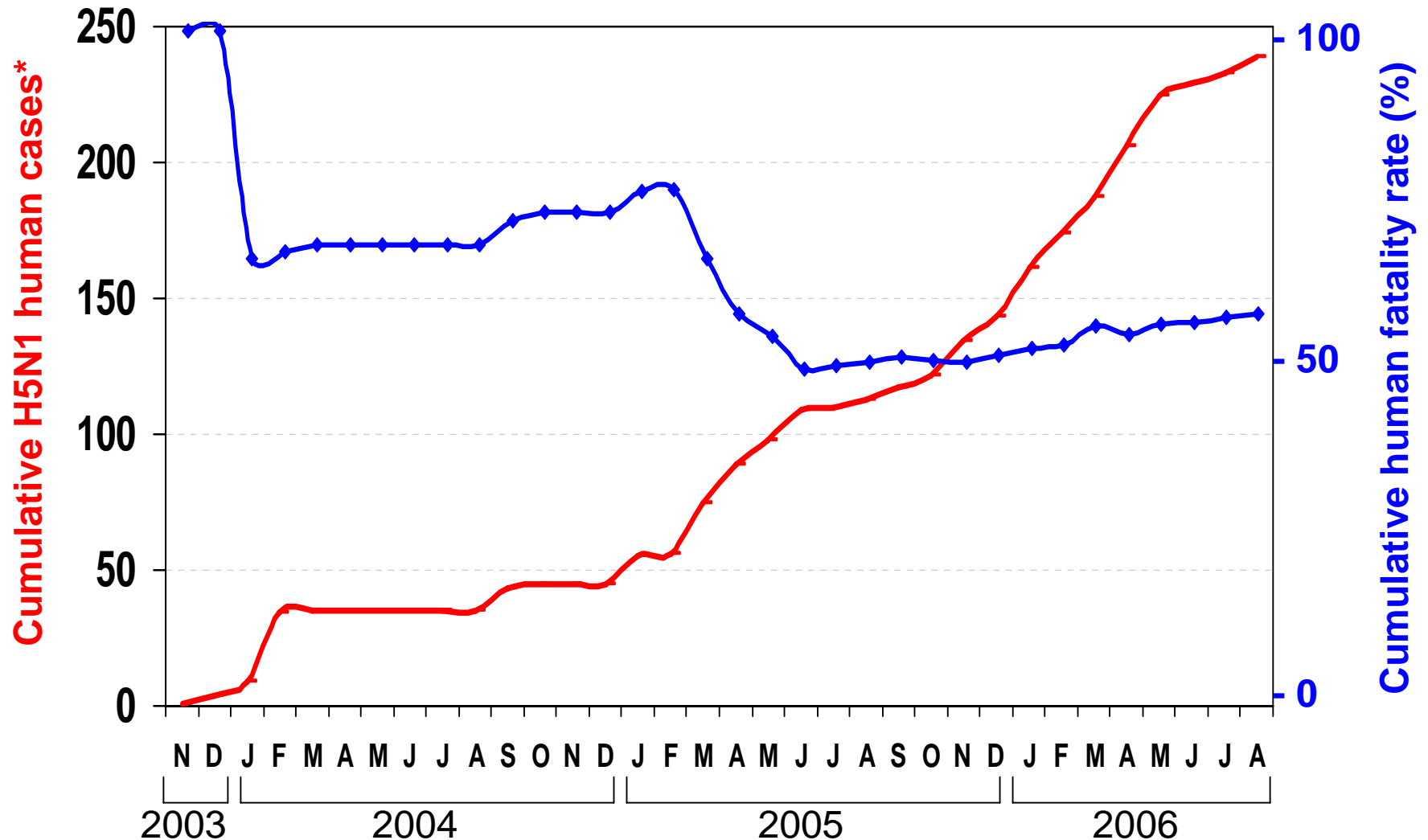
Human case #	Complete data	Fatality Rate	Symptoms → hospitalization (days)	Symptoms → death (days)	Symptoms → WHO report (days)
1-10	6	60%	4.3	8.4	16.5
11-20	7	90%	4.9	8.3	18.6
21-30	3	80%	3.7	10.3	18.4
31-40	3	80%	5.3	9.7	20.3
41-50	6	70%	7.2	9.0	18.1
51-58	8	88%	10.1	10.1	17.9

VIETNAM

Human case #	Complete data	Fatality Rate	Symptoms → hospitalization (days)	Symptoms → death (days)	Symptoms → WHO report (days)
1-10	3	80%	4.3	13.0	26.7
11-20	0	50%	CNC	CNC	CNC
21-30	0	70%	CNC	CNC	CNC
31-40	5	70%	4.2	9.6	14.0
41-50	4	25%	3.3	4.0	17.0

CNC = cannot calculate due to lack of data

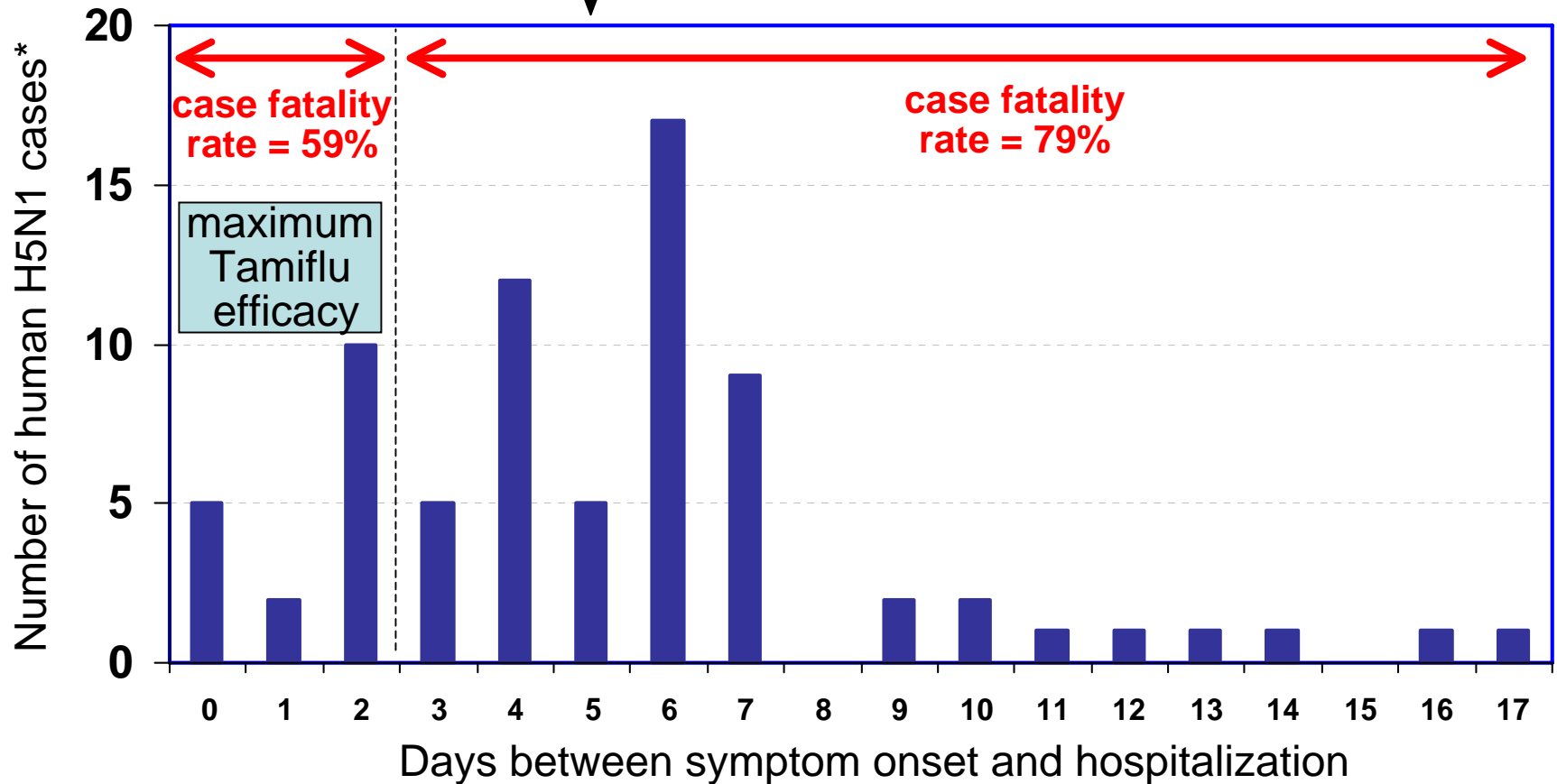
...And Generally Does Not Improve Survival Rate for Human Cases



* Laboratory-confirmed H5N1 cases and deaths in humans reported to the World Health Organization as of 17 August 2006.

Most Human Cases Not Hospitalized In Time to Get Maximal Benefit from Tamiflu

Average = 5.2 days

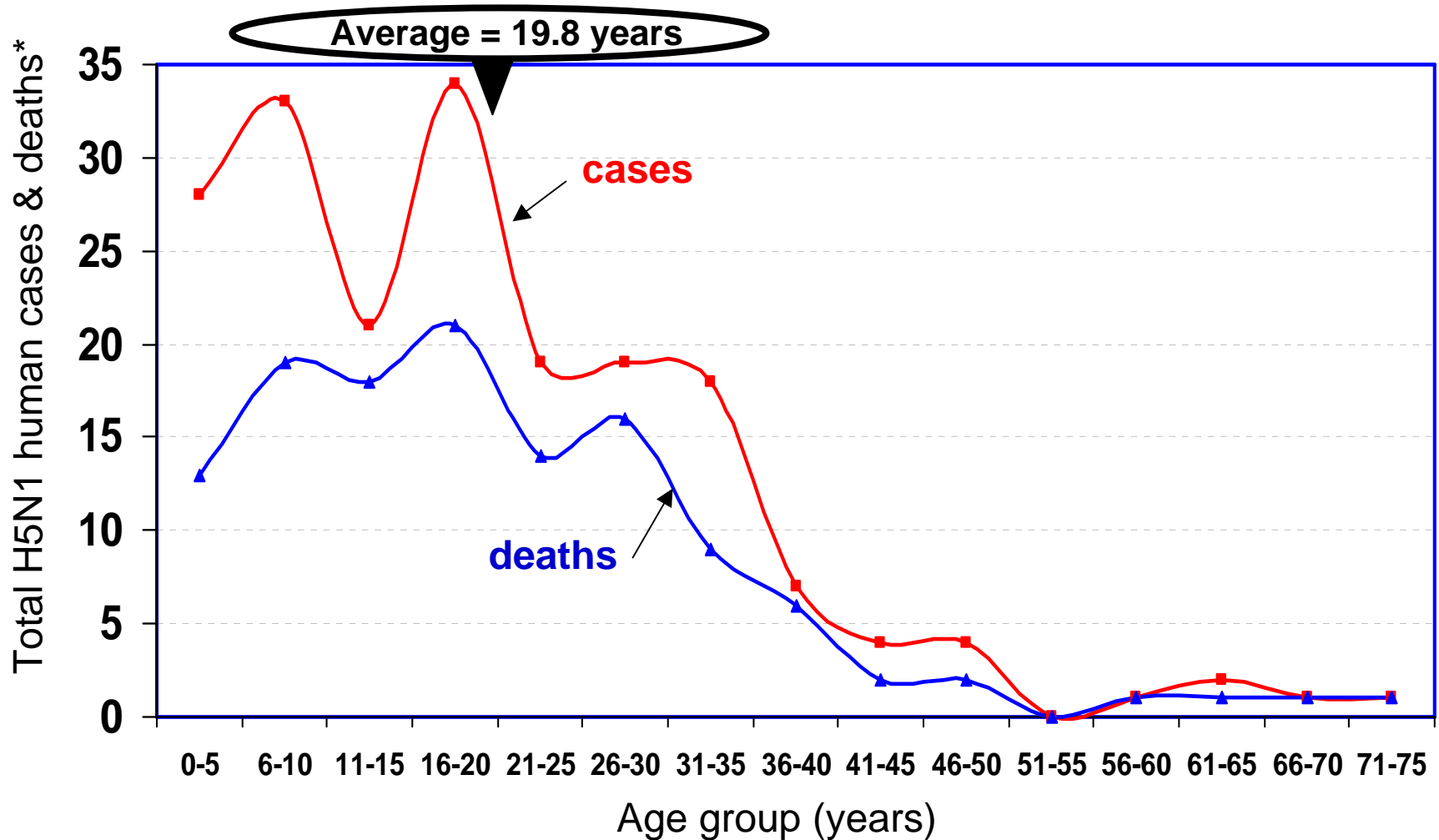


* Only includes laboratory-confirmed H5N1 cases and deaths in humans reported to the World Health Organization as of 17 August 2006 for which there is symptom onset and health status data.

Family clusters in several countries suggest either shared risk factors or genetic susceptibility to H5N1 infection

Country	Total Human Cases	Cases with other family members also confirmed (% of total)	Cases having contact with sick/dead birds or H5N1-infected people (% of total)
Azerbaijan	8	5 (63%)	0 (0%)
Cambodia	6	0 (0%)	4 (67%)
China	21	0 (0%)	6 (29%)
Djibouti	1	0 (0%)	0 (0%)
Egypt	14	2 (14%)	7 (50%)
Indonesia	58	15 (26%)	39 (67%)
Iraq	23	2 (100%)	1 (50%)
Thailand	24	4 (17%)	16 (67%)
Turkey	12	6 (50%)	2 (17%)
Vietnam	93	15 (16%)	8 (9%)
TOTAL	239	49 (21%)	83 (35%)

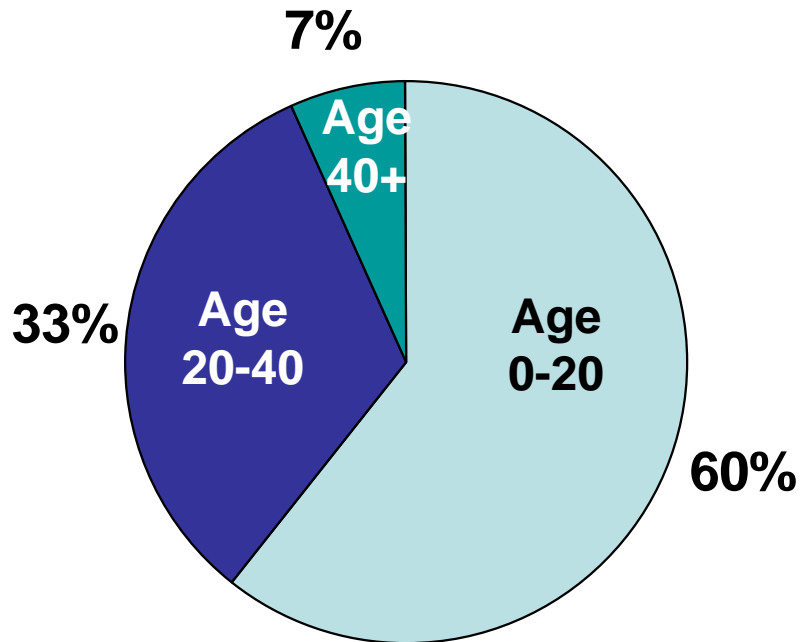
Overall, No Single Age Group More Susceptible to Infection...



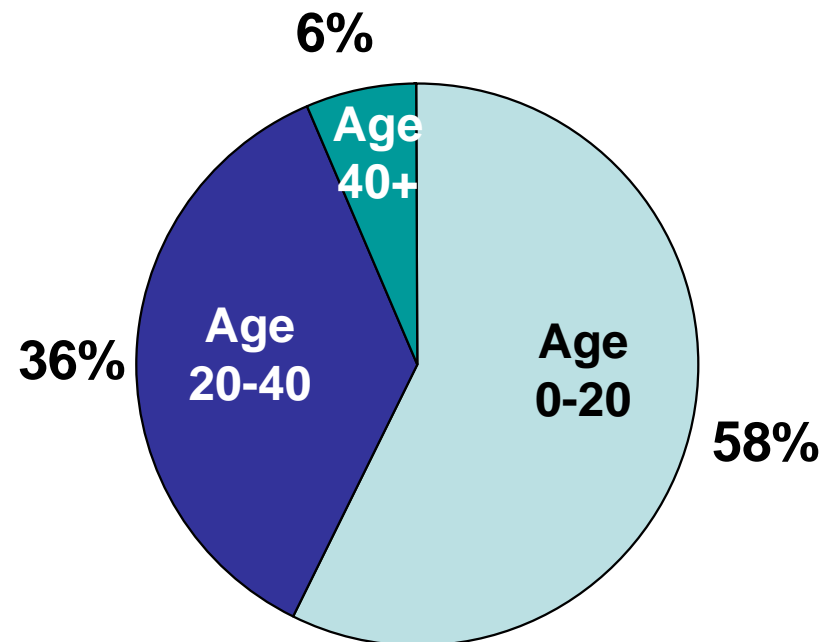
* Only includes laboratory-confirmed H5N1 cases and deaths in humans reported to the World Health Organization as of 17 August 2006 for which there is age data.

However, Most Cases and Deaths in People Younger than 20 Years Old

Cases (n=192)

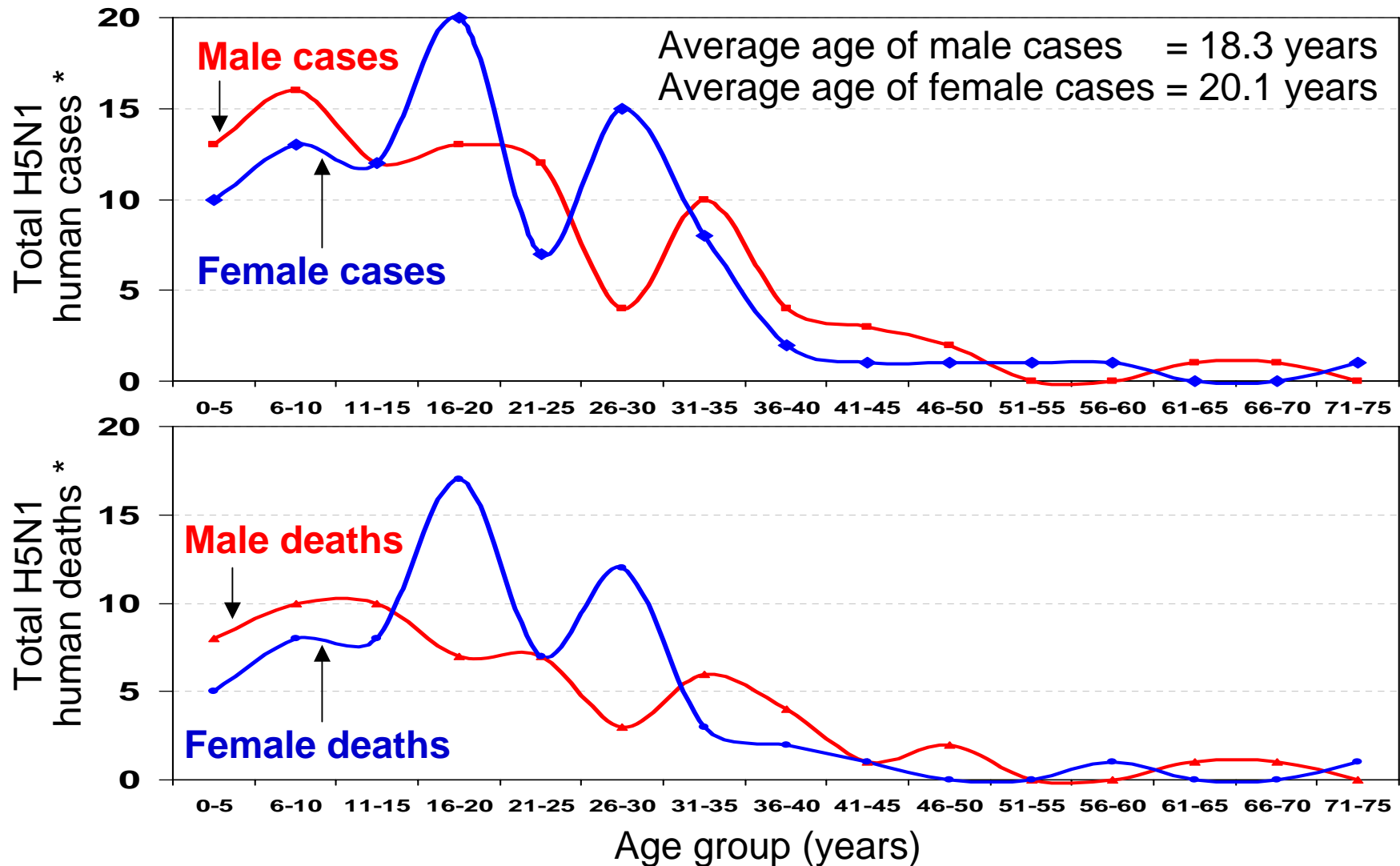


Deaths (n=124)



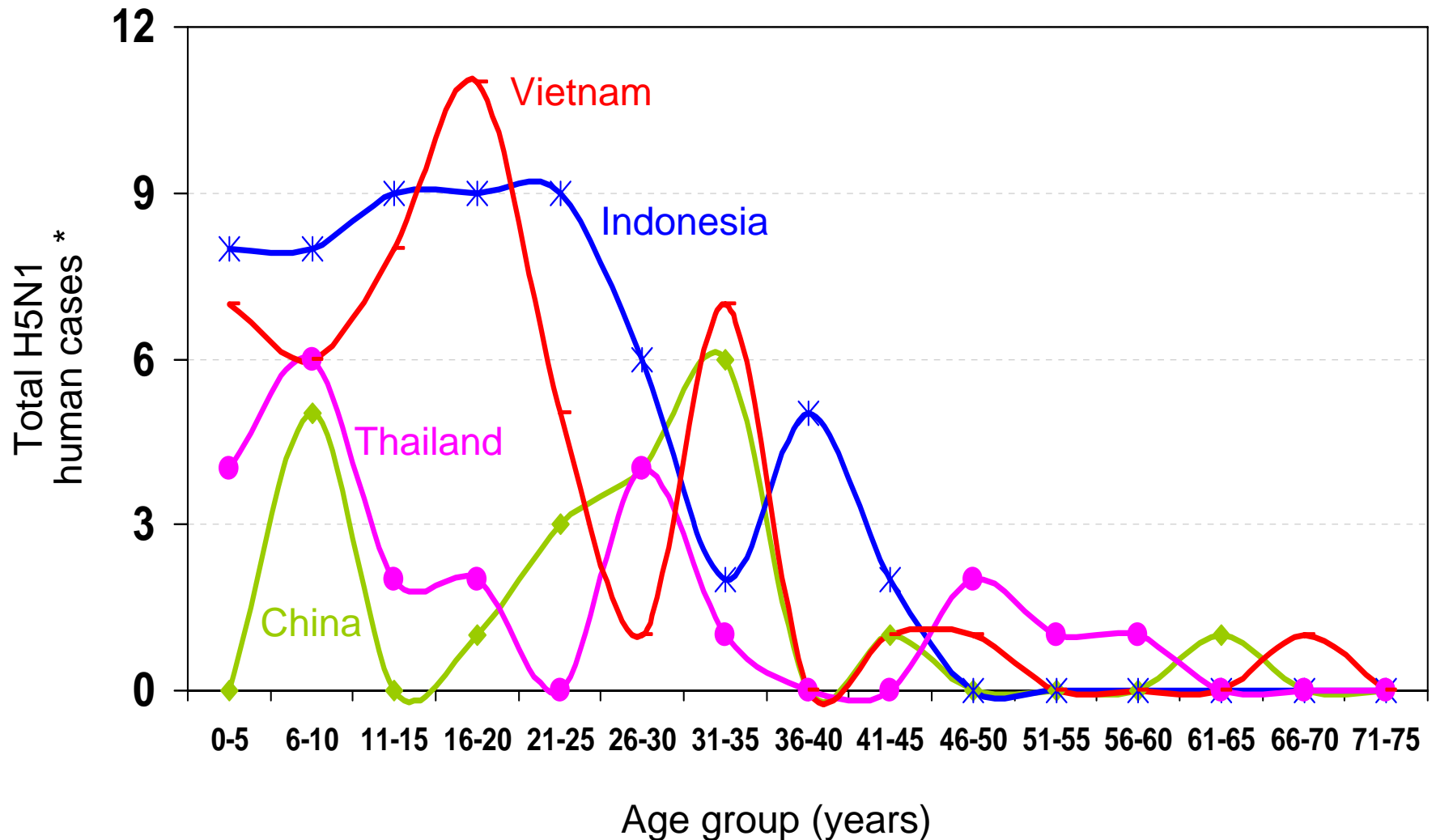
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Males <10 Years and Females 11-30 Years May Have Higher Risk of Infection



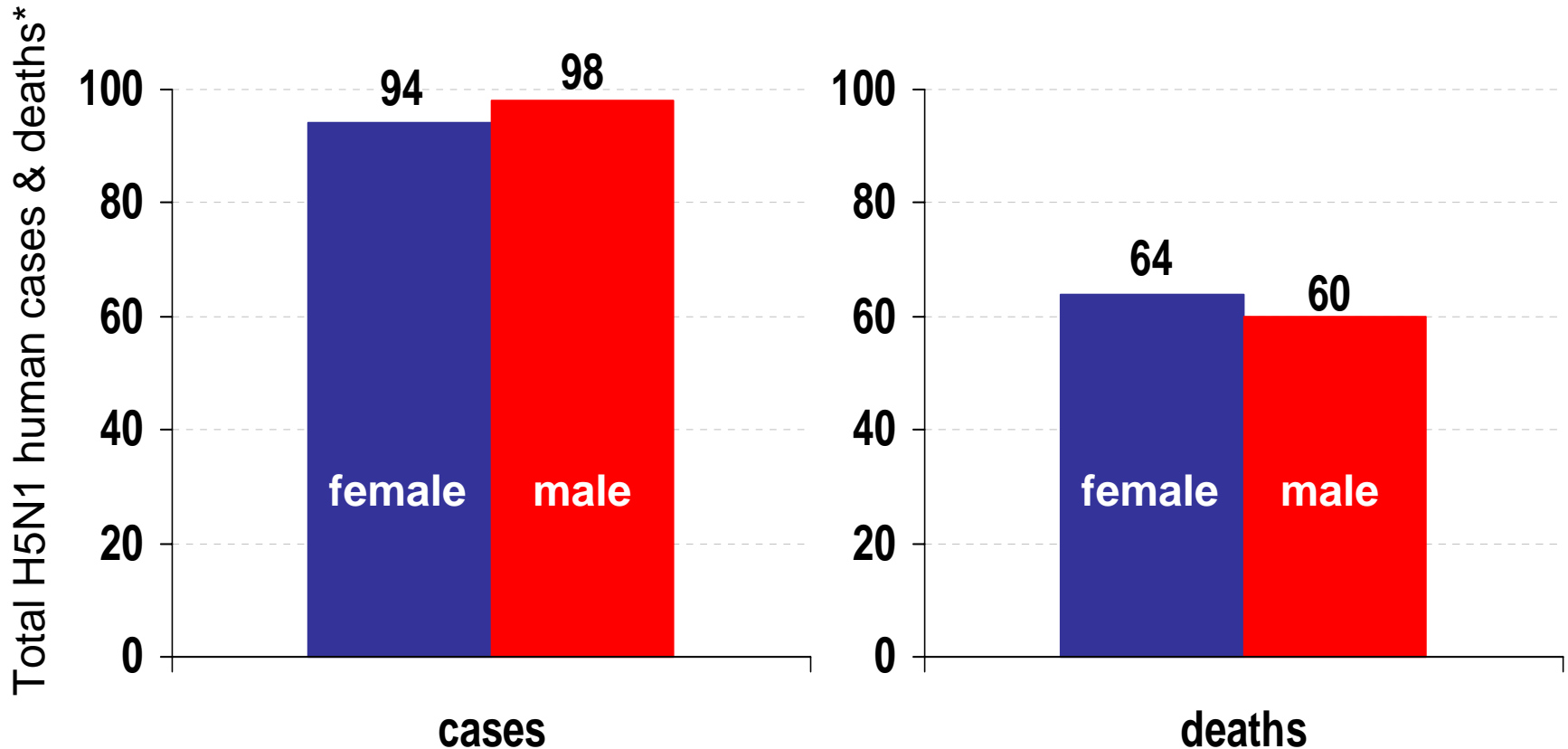
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Distribution of Cases by Age Group for Countries with More than 20 Human Cases



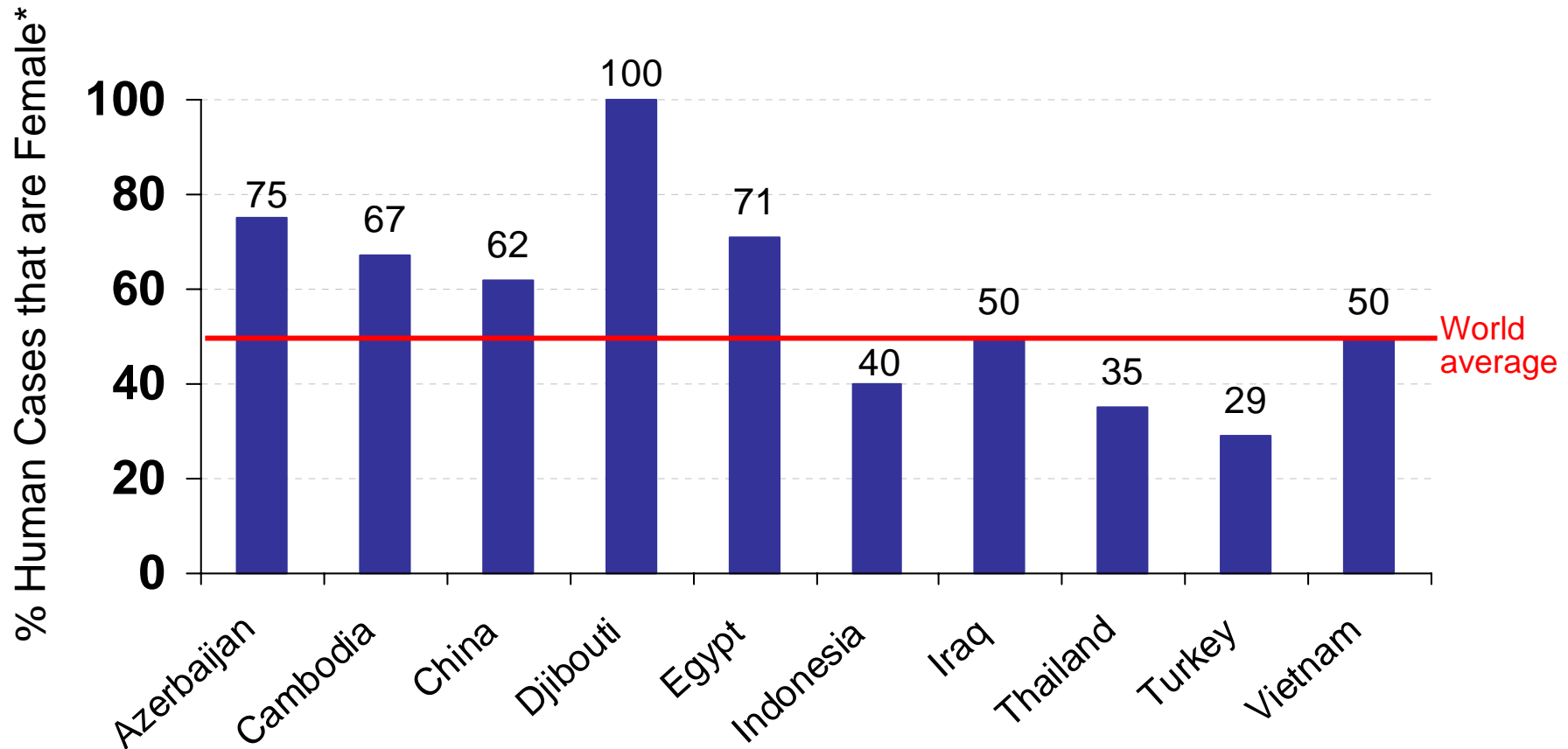
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Overall, Males and Females Appear to be Equally Susceptible to H5N1 Infection...



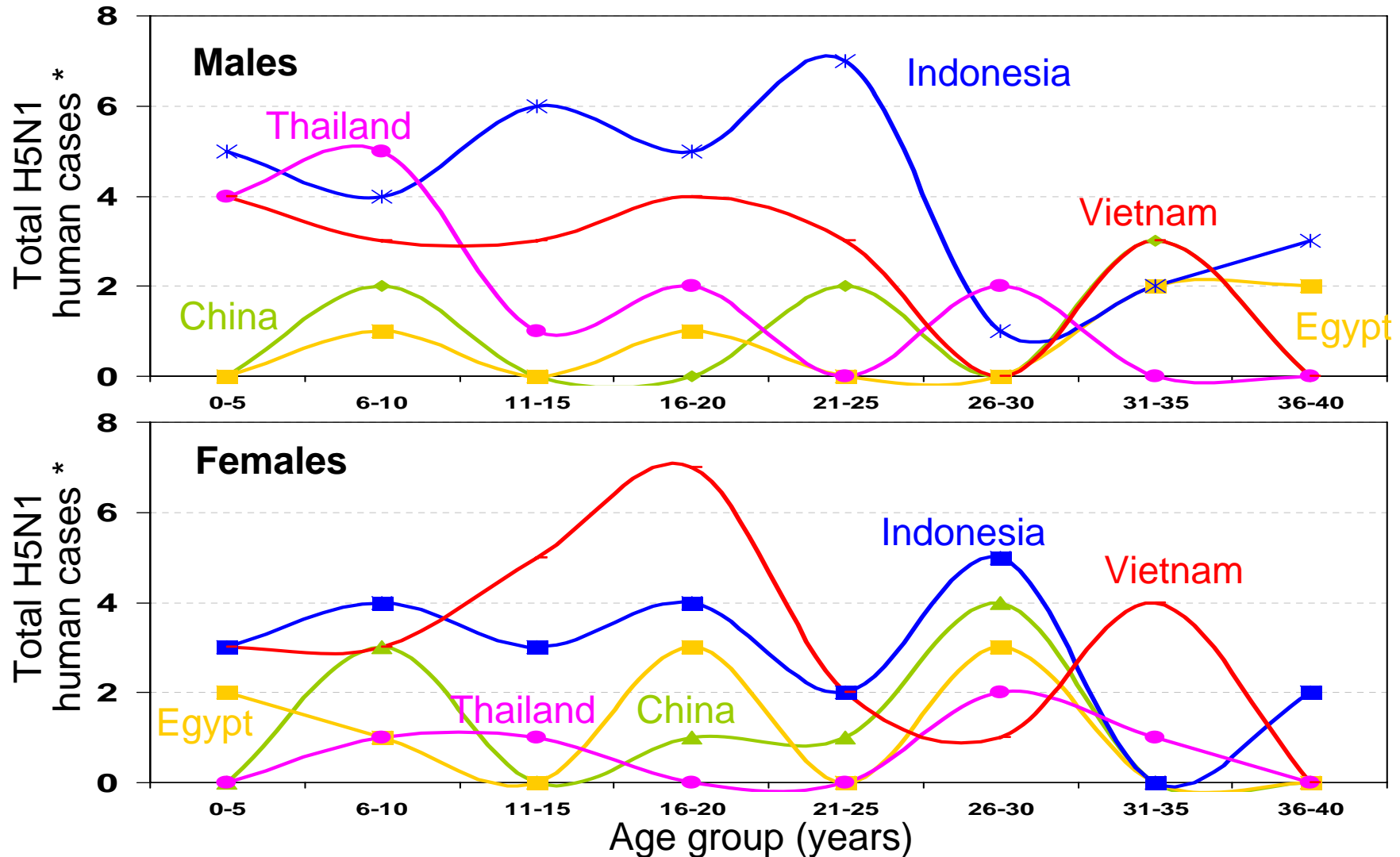
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However, Gender Distribution Differs Among Countries (Small Sample Sizes and/or Behavior Differences Affecting Infection Risk)



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Distribution of Cases by Gender and Age Group



* Only includes laboratory-confirmed H5N1 cases and deaths in humans reported to the World Health Organization as of 17 August 2006 for which there is age data.